

IN THE CLAIMS:

Please amend claims 2 and 11-20 as follows:

1. (Original claim) A bone-analogous coating for metallic implant materials, comprising a collagen matrix mineralized with a calcium phosphate phase.

A⁶ 2. (Currently amended) A coating according to Claim 1, wherein the collagen matrix contains more than one layer ~~is layered~~.

3. (Original claim) A coating according to Claim 1, wherein the calcium phosphate phase of the matrix contains amorphous calcium phosphate ($\text{Ca}_9(\text{PO}_4)_6 \cdot n\text{H}_2\text{O}$), hydroxyapatite ($\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$), octacalcium phosphate ($\text{Ca}_8\text{H}_2(\text{PO}_4)_6 \cdot 5\text{H}_2\text{O}$), brushite ($\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$) or mixtures thereof.

4. (Original claim) A coating according to Claim 1, wherein the calcium phosphate phase is doped with fluoride, silver, magnesium or carbonate ions or combinations thereof.

5. (Original claim) A coating according to Claim 1, wherein the collagen is collagen of type I.

6. (Original claim) A coating according to Claim 1, wherein the collagen is a mixture of collagen of types I to III.

7. (Original claim) A coating according to Claims 1, wherein said coating further contains gelatin.

8. (Original claim) A coating according to Claims 1, further containing growth factors, peptide sequences, hormones, antibiotics or mixtures thereof.

9. (Original claim) A coated metallic implant comprising a metallic implant having an outer layer, wherein the outer layer comprises a coating according to Claim 1.

10. (Original claim) A coated metallic implant according to Claim 9, wherein the metallic implant is made of titanium or titanium alloy.

11. (currently amended) ~~A coated metallic implant prepared by the process for the electrochemical coating of metallic implant materials with a mineralised collagen matrix comprising:~~

- a) coating a metallic implant material by immersion in a collagen solution at a pH of less than 8 and a temperature 4 - 40°C, and
- b) coating said metallic implant material with a calcium phosphate phase (CPP) in an electrochemically assisted process by means of galvanostatic polarization in an electrolyte solution comprising calcium ions and phosphate ions,

wherein process steps a) and b) are performed simultaneously or sequentially.

12. (currently amended) A process coated metallic implant according to Claim 11, wherein an additional process step b) is placed in front of process step a).

13. (currently amended) A process coated metallic implant according to Claim 11, wherein the process steps a) and b) proceed alternately a number of times.

14. (currently amended) A process coated metallic implant according to Claim 11, wherein the process steps a) and b) are combined into one step, the metallic implant material to be coated being electrochemically polarized cathodically in a collagen solution comprising calcium ions and phosphate ions.

15. (currently amended) A process coated metallic implant according to Claim 11, wherein a cathodic current flow of -0.2 to -50 mA/cm^2 flows for 25 to 40 minutes during the galvanostatic polarization in process step b).

16. (currently amended) A process coated metallic implant according to Claims 11, wherein the mineralised collagen matrix is layered.

17. (currently amended) A process coated metallic implant according to Claims 11, wherein the coating further comprises gelatin.

18. (currently amended) A process coated metallic implant according to Claim 11, wherein a cathodic current flow of -0.5 to -30 mA/cm^2 flows for 30 to 40 minutes during the galvanostatic polarization in process step b).

19. (currently amended) A process coated metallic implant according to Claim 11, wherein a cathodic current flow of -1 to -10 mA/cm² flows during the galvanostatic polarization in process step b).

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20. (currently amended) A process coated metallic implant according to claim 11, wherein the galvanostatic polarization in process step b) is performed at a temperature of 30-40 °C.

21. (original claim) A coated metallic implant comprising a metallic implant having an outer layer, wherein the outer layer is 0.04-150 µm thick and comprises a coating according to Claim 1.

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Please add the following new claims:

22. (New claim) A coated metallic implant comprising a metallic implant having an outer layer, wherein the outer layer comprises a coating according to Claim 2.

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23. (New claim) A coated metallic implant according to Claim 22, wherein the metallic implant is made of titanium or titanium alloy.

24. (New claim) A coated metallic implant according to Claim 2, comprising a metallic implant having an outer layer, wherein the outer layer is 0.04-150 µm thick and the calcium phosphate phase contains crystals from 300-500 nm in length and from 50-60 nm in diameter.

25. (New claim) A coated metallic implant according to Claim 24, wherein the metallic implant is made of titanium or titanium alloy.
